Department of the Army
Headquarters, United States Army
Training and Doctrine Command
Fort Monroe, Virginia 23651-1047

***TRADOC Regulation 350-29**

20 January 2010

Training

PREVENTION OF HEAT AND COLD CASUALTIES

FOR THE COMMANDER:

OFFICIAL:

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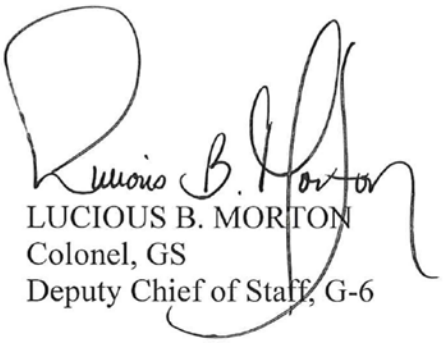
Deputy Commanding General/
Chief of Staff



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History. This publication is a rapid action revision. The portions affected by this rapid action revision are listed in the summary of change.

Summary. This regulation prescribes policy and provides guidance to commanders in preventing environmental (heat or cold) casualties.

Applicability. This regulation applies to all Active Army and Reserve component training conducted at service schools, Army training centers, or other training activities under Headquarters, U.S. Army Training and Doctrine Command (TRADOC) control.

Proponent and exception authority. The proponent for this regulation is the Deputy Commanding General/Chief of Staff, TRADOC. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations.

Army management control process. This regulation does not contain management control provisions.

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from the Deputy Chief of Staff, G-6 (ATIM), 84 Patch Road, Bldg 162, Fort Monroe, VA 23651-1047.

*This regulation supersedes TRADOC Regulation 350-29, 16 July 2003.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to Command Surgeon's Office, TRADOC, ATTN: ATBO-M, 60 Ingalls Road, Fort Monroe, VA 23651-1032. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

Availability. This publication is distributed solely through the TRADOC Homepage at http://www.tradoc.army.mil/tpubs/regndx.htm.

Summary of Change

TRADOC Regulation 350-29
Prevention of Heat and Cold Casualties

This rapid action revision, dated 20 January 2010 -

o Defines responsibilities of subordinate agencies and unit commanders (para 1-3).

o Prescribes standards to identify Soldiers who are at risk for heat or cold injury, including preexisting conditions and taking medications (paras 2-1d and 3-1d).

o Prescribes annual heat and cold injury prevention training (paras 1-3d(1) and (2)).

o Places emphasis on assessment of a casualty's mental status, rather than body temperature, in determining heat injury (para D-2d).

o Removes intravenous (IV) therapy as an initial treatment by nonmedical responders (para 2-2d(2)(d)).

o Describes procedure for use of iced sheets (paras 2-2d(2)(c) and D-2).

o Provides definitions for heat injuries and cold injuries that require reporting, in agreement with operations and safety reporting (para 1-3c(5)).

o Replaces text and graphics on prevention and treatment measures with links to current resources (para 1-3e(1)).

o Uses the term "casualty" to mean any person who is lost to the organization as the result of an injury and "injury" to refer to the condition resulting from extremes of temperature or prolonged exposure (throughout document).

Contents

Figure List

Chapter 1
Introduction

1-1. Purpose
This regulation prescribes policy and provides guidance to commanders in preventing environmental (heat or cold) casualties.

1-2. References
Appendix A contains required and related publications and referenced forms.

1-3. Responsibilities
Commanders and supervisors at all levels are responsible for protecting Soldiers and civilian personnel from the adverse effects of heat and cold, and for ensuring subordinate leaders are trained in recognition and treatment of heat and cold injury.

a. Deputy Chief of Staff, G-3/5/7. Receive and forward compliance reports from centers and schools for annual heat and cold injury prevention and treatment training (see paras 1-3d(1) and (2)).

b. TRADOC Surgeon. Prepare and disseminate memorandums on behalf of CG, TRADOC prompting compliance among TRADOC subordinate commands with hot and cold weather injury prevention training each year IAW TRADOC Regulation 350-6, para H-12a.

c. TRADOC Senior Commanders and TRADOC School and Center Commandants.

(1) Ensure appropriate hot weather and cold weather protective items (clothing, shelter) are available to Soldiers.

(2) Ensure potable water, ice, and supplemental snacks and beverages are available to Soldiers. Plan for 3 gallons of water per day per Soldier just for drinking. Consider providing flavored electrolyte supplements for water to increase palatability.

(3) Ensure medical support and evacuation plans are tested at least annually (see TRADOC Regulation 350-6, para 3-31c).

(4) Establish coordination between the medical treatment facility and training organizations for assistance from environmental health to:

(a) Present annual training (see paras 2-2 and 3-2).

(b) Assist in development of local composite risk management worksheets (see appendixes B and C).

(5) Report heat and cold injuries IAW TRADOC Regulation 1-8, para 2-2b(5).

(6) Report compliance with heat injury prevention and treatment training prior to 15 April each year, and cold injury prevention and treatment training prior to 15 October each year, thru the TRADOC Emergency Operations Center (EOC) watch team (tradoc.eocwatch@us.army.mil) to the TRADOC Surgeon.

d. Brigade Commanders.

(1) Conduct heat injury prevention and treatment training for all subordinate leaders prior to 15 April each year.

(2) Conduct cold injury prevention and treatment training for all subordinate leaders prior to 15 October each year.

(3) Adjust training schedules (for example, train during the cooler part of the day) and locations (for example, indoors or in the shade) as needed to protect Soldiers against extremes of heat and cold.

(4) Refer to TRADOC Regulation 385-2, para 1-5b, when making the decision to accept risk.

e. Unit Leaders.

(1) Download and publish copies of “Commander's, Senior NCO's and Instructor's Guide to Risk Management of Heat Casualties” (available from the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) Web site at http://chppm-www.apgea.army.mil/heat/) and “Unit Leader’s and Instructor’s Risk Management Steps for Preventing Cold Casualties” (available at http://usachppm.apgea.army.mil/HIOCWI/) for local use.

(2) Utilize field sanitation team members to monitor conditions of cold and heat and advise on risk factors (see TRADOC Regulation 350-6, para 3-37).

(3) Ensure Soldiers' clothing and equipment is present and serviceable prior to the training day; recommend modifications of the uniform to senior leadership, based on local conditions.

(4) Identify and mark Soldiers who are at risk for heat and cold injury (see references listed at paras 2-2b(1), 3-2 b(1), and F-1b(2)).

(5) Monitor conditions of heat and cold on the training site (see TRADOC Regulation 350-6, para H-12b(2)). Recommend modifications for scheduling, location, and uniform to senior leadership.

(6) Plan for alternate activities and locations for conditions of extreme heat and cold (for example, physical activity or warming shelters in case of extreme cold).

(7) Be prepared to apply iced sheets in case of heat injury. See appendix D for procedures on use of iced sheets.

(8) Ensure Soldiers drink sufficient amounts of fluids and consume all their meals. Encourage Soldiers to drink frequently in small amounts and observe their fluid intake.

(9) Ensure Soldiers maintain their supply of sunscreen and apply it daily.

(10) Develop and enforce work/rest cycles, guard rotation, and sleep plans during extended training hours (see references listed at paras 2-2b(1) and 3-2b(1)).

(11) Be prepared to treat and evacuate Soldiers who demonstrate signs of heat or cold injury.

(12) Remind Soldiers to observe their buddies for signs of heat or cold injury (see TRADOC Regulation 350-6, paragraph 2-9a(4)).

(13) Reevaluate the training mission if two or more heat injuries occur at a given training site on the same day.

Chapter 2
Prevention and Treatment of Heat Injuries

2-1. Basics of heat injury risk

a. The threat. Exposure to high environmental temperature produces heat stress in the body. As the body attempts to compensate, physiological strain or *heat load* results. This strain, usually in combination with other strains caused by work, dehydration, and fatigue may lead to heat injury. Environmental conditions, namely air temperature (the temperature of surrounding objects), vapor pressure of water in the air (humidity), and air movement influence the heat equilibrium of the body and its physiologic adjustments.

b. The defense. The body rids itself of heat normally through the skin and by exhaled breath, constituting *heat relief*. Some heat is discharged by radiation from the skin, but the body relies mostly on evaporation of sweat from the skin to cool. The adverse impact of high environmental temperature can be reduced by drinking enough water, wearing clothing properly, maintaining a high level of fitness, and resting after exposure to heat. These measures contribute to the body's normal mechanisms for relieving its heat load.

c. Acclimatization. Most Soldiers' physiological responses to heat stress improve in 10-14 days of exposure to heat and regular strenuous exercise. Factors to consider in acclimatizing Soldiers are the wet bulb globe temperature (WBGT) index (see Appendix E); work rates and duration; uniform and equipment; and Soldiers' physical and mental conditions.

d. Risk factors for heat injury include the following:

(1) **H**igh heat category, especially on several sequential days (measure WBGT when ambient temperature is over 75º F).

(2) **E**xertional level of training, especially on several sequential days.

(3) **A**cclimatization (and other individual risk factors – see "Commander's, Senior NCO's and Instructor's Guide to Risk Management of Heat Casualties," cited in para 1-3e(1)).

(4) **T**ime (length of heat exposure and recovery time).

(5) **Not acclimatized** to heat.

(6) Exposure to any of the following in the previous 2-3 days:

- Increased heat exposure.
- Increased exertional levels.
- Lack of quality sleep.

(7) Poor fitness (unable to run 2 miles in less than 16 minutes).

(8) Overweight.

(9) Minor illness (cold symptoms, sore throat, low grade fever, nausea, vomiting).

(10) Taking medications (either prescribed or over the counter)/supplements/dietary aids (for example, allergy or cold remedies, ephedra supplement).

(11) Use of alcohol in the last 24 hours.

(12) Prior history of heat illness (any heat stroke, or >2 episodes of heat exhaustion).

(13) Skin disorders such as heat rash and sunburn that prevent effective sweating.

(14) Age more than 40 years.

e. Types of heat injury.

(1) Heat cramps are caused by an imbalance of electrolytes in the body as a result of excessive sweating. This condition causes the casualty to experience cramping in the arms, legs, and abdomen and sweat excessively, with or without thirst.

(2) Heat exhaustion is caused by loss of body fluids (dehydration) through sweating without adequate fluid replacement. It can occur in an otherwise fit individual who is involved in physical exertion in any hot environment, especially if the service member is not acclimatized

to that environment. These signs and symptoms are excessive sweating with pale, moist, cool skin; headache; weakness; dizziness; loss of appetite; cramping; and nausea (with or without vomiting).

(3) Heat stroke is caused by exposure to high temperatures (such as direct sunlight) or being dressed in protective overgarments, which causes the body temperature to rise. Heat stroke occurs more rapidly in service members who are engaged in work or other physical activity in a high heat environment. Heat stroke is caused by a failure of the body's cooling mechanism, which includes a decrease in the body's ability to produce sweat. The victim may experience weakness, dizziness, confusion, headaches, seizures, nausea, stomach pains or cramps, and respiration and pulse may be rapid and weak. Unconsciousness and collapse may occur suddenly.

2-2. Heat injury prevention and treatment
Resources for leaders are available as follows:

a. Annual training.

(1) The following training products are available through Reimer Digital Library, http://www.adtdl.army.mil/ (log in; select Library Search, then Commandant Approved Training, then "Common Core TSP" and "Medical"):

(a) 081-831-1053, Practice Individual Preventive Medicine Countermeasures.

(b) 081-831-1008, Perform First Aid for Heat Injuries.

(2) The following training products are available from the CHPPM Web site at http://chppm-www.apgea.army.mil/heat/.

(a) Heat Injury Risk Management video (23:00).

(b) Heat Injuries, Part II – Prevention and Treatment video (17:42).

b. Composite Risk Management process.

(1) Use "Commander's, Senior NCO's and Instructor's Guide to Risk Management of Heat Casualties" (see paragraph 1-3e(1)) to develop DA Form 7566 (Composite Risk Management Worksheet).

(2) Refer to prototype composite risk management worksheet at appendix B.

c. Pocket guide. The HIP [Heat Injury Prevention] Pocket Guide is the best resource for leaders to carry on their persons. It is available from the CHPPM Web site.

d. Treatment. All treatment must be supervised by a constant observer.

(1) Soldiers with mild heat injuries should be placed in the shade and given fluids to drink. Evacuate if symptoms worsen or do not improve after 30 minutes of rest and rehydration.

(2) Suspected heat stroke.

(a) Call emergency medical service (EMS).

(b) Place the Soldier in the shade and remove outer clothing.

(c) Apply iced sheets (see appendix E).

(d) Do not start intravenous fluids. This should be done by emergency personnel.

(e) Continue cooling until EMS arrives.

(f) Do not attempt to evacuate the Soldier yourself – focus on cooling.

2-3. Other conditions associated with hot weather, overexertion, and overhydration
In addition to the above conditions, leaders should be aware of the following hot weather-related conditions:

a. Heat rash (prickly heat) is caused by restrictive clothing, excessive sweating, and inadequate hygiene. Heat rash can prevent effective sweating and increase a Soldier's risk for heat injury.

b. Sunburn is caused by exposure to the sun without protection from clothing or sunscreen. It can prevent effective sweating and increase a Soldier's risk for heat injury.

c. Skin cancer, including basal and squamous cell carcinomas and melanoma, is the most common of all cancers. Exposure to ultraviolet radiation from the sun (regardless of cloud cover or low temperature) sets the conditions for skin cancer. Soldiers with fair skin that burn and freckle easily, light blue/green eyes, and either red or blonde hair are at highest risk for developing melanoma; however, anyone can develop skin cancer.

d. Rhabdomyolysis or "rhabdo" is the breakdown of muscle fibers and release of muscle fiber products into the circulation, producing muscle tenderness, muscle weakness, and abnormal urine color (dark, red, or cola colored). It is not classified as a heat injury but is caused by extreme exertion in a person who is unaccustomed to exertion, especially if subjected to environmental heat stress with inadequate hydration and electrolyte abnormalities from an inadequate diet and/or abuse of laxatives or diuretics. Some of the muscle breakdown products are toxic to the kidney and frequently result in kidney damage. Sickle cell trait can increase a Soldier's risk for rhabdomyolysis.

e. Hyponatremia (water intoxication) is caused by fluid overload (that is, drinking more than 12 quarts of water per day) and under-replacement of salt losses (not eating enough salted food). This condition can be deadly. Symptoms of hyponatremia can mimic a heat injury, so it is

important that Soldiers regulate their fluid intake and diets, and battle buddies and supervisors be generally aware of fellow Soldiers' fluid and dietary intake. Repeated vomiting is a sign that suggests over hydration in the presence of heat injury. Any Soldier who is vomiting repeatedly and possibly has a heat injury should be evacuated.

Chapter 3
Prevention and Treatment of Cold Injuries

3-1. Basics of cold injury risk

a. The threat. The body loses heat by radiation if the outside temperature is lower than the body's temperature. It loses heat by evaporation cooling from sweating, which is useful in hot weather but problematic in cold weather, especially when sweat trapped by clothing diminishes the insulating value of the clothing.

b. The defense. The normal response to the cold is for the blood vessels in the skin and remote parts of the extremities to constrict and conserve warmed blood for the vital organs. By moving large muscle groups by shifting their position on the ground, they can help shift blood from the central body to the periphery. Actions to aid the body's defenses against the cold include dressing properly for the cold and wet, especially for relatively low level of activity (such as lying on the ground); adding clothing in layers for cold and inactivity and removing layers for increased temperatures and activity to prevent sweating; staying well-nourished so the body produces calories; and drinking plenty of fluids, which is important in maintaining the circulation volume.

c. Acclimatization. Soldiers do not respond physiologically to cold exposure the same as to heat exposure. The adjustments to cold exposure are less pronounced, slower to develop, and less practical in terms of relieving strain. For this reason, it is more important for leaders to ensure Soldiers are properly clothed for the cold and wet, adjust the uniform requirements depending on activity, and provide for external warming measures (heated shelter).

d. Risk factors for cold injury include the following:

(1) Cold (temperature 40º F and below).

(2) Wet (rain, snow, ice, humidity) or wet clothes.

(3) Wind (wind speed 5 mph and higher).

(4) Lack of adequate shelter/clothes.

(5) Lack of provisions/water.

(6) Previous cold injuries or other significant injuries.

(7) Use of tobacco/nicotine or alcohol.

(8) Skipping meals/poor nutrition.

(9) Low activity.

(10) Fatigue/sleep deprivation.

(11) Little experience/training in cold weather.

(12) Cold casualties in the previous 2-3 days.

3-2. Cold injury prevention and treatment
Resources for leaders are available as follows:

a. Annual training.

(1) The following training products are available through Reimer Digital Library, http://www.adtdl.army.mil/ (log in; select Library Search, then Commandant Approved Training, then "Common Core TSP" and "Medical"):

(a) 081-831-1053, Practice Individual Preventive Medicine Countermeasures.

(b) 081-831-1045, Perform First Aid for Cold Injuries.

(2) The following training product is available from the CHPPM Web site at http://usachppm.apgea.army.mil/HIOCWI/: Cold Injuries: Description, Treatment and Prevention, November 2006 (PowerPoint presentation).

b. Composite Risk Management process.

(1) Use "Unit Leader's and Instructor's Risk Management Steps for Preventing Cold Casualties" (see paragraph 1-3e(1)) to develop DA Form 7566, Composite Risk Management Worksheet).

(2) Refer to prototype composite risk management worksheet at appendix C.

c. Foldout booklet. Graphic Training Aid 05-08-012, Individual Safety Card, is the best resource for leaders to carry on their persons. It is available through Reimer Digital Library, http://www.adtdl.army.mil/ (log in; select "Library Search," then "Commandant Approved Training," then "Graphic Training Aids" and "Medical;" or order through the installation Training Audiovisual Support Center).

3-3. Other conditions associated with cold weather
In addition to the above conditions, leaders should be aware of the following cold weather-related conditions:

a. Carbon monoxide poisoning produces vague symptoms of fatigue, headache, nausea, vomiting, loss of coordination, and mental status changes, including giddiness and decreasing mental alertness. Progressive exposure results in loss of consciousness and death.

b. Snow blindness is caused by glare from an ice field or snowfield, especially at high altitude, causing a sensation of grit in the eyes with pain in and over the eyes, made worse by moving the eyeball. Other signs and symptoms are watering, redness, headache, and increased pain on exposure to light. It is more likely to occur in hazy, cloudy weather than when the sun is shining. Snow blindness is prevented by wearing sunglasses in these conditions.

Appendix A
References

Section I
Required Publications

TRADOC Regulation 1-8
TRADOC Operations Reporting

TRADOC Regulation 385-2
U.S. Army Training and Doctrine Command Safety Program

Section II
Related Publications

Tri-Service Reportable Events – Guidelines & Case Definitions
Accessible at
http://afhsc.army.mil/Documents/TriService_CaseDefDocs/June09TriServGuide.pdf

Army Regulation 350–1
Army Training and Leader Development

Field Manual 4-02.17
Preventive Medicine Services

Field Manual 4-25.11
First Aid

Field Manual 4-25.12
Unit Field Sanitation Team

Field Manual 5-19
Composite Risk Management

Field Manual 21-10
Field Hygiene and Sanitation

Field Manual 31-70
Basic Cold Weather Manual

GTA 05-08-012
Individual Safety Card

TB MED 507
Heat Stress Control and Heat Casualty Management

TB MED 508
Cold Injury

US Army Research Institute of Environmental Medicine Technical Note 02-2
Sustaining Health and Performance In Cold Weather Operations

TRADOC Regulation 350-6
Enlisted Initial Entry Training (IET) Policies and Administration

Part III
Referenced Forms

DA Form 1045
Army Ideas for Excellence program (AIEP) Proposal

DA Form 2028
Recommended Changes to Publications and Blank Forms

DA Form 7566
Composite Risk Management Worksheet

Appendix B
Composite Risk Assessment Worksheet – Heat Injury

B-1. Composite risk assessment worksheet – heat injury

This worksheet (figure B-1) is provided as an example only. Each worksheet should be developed specifically for each site.

COMPOSITE RISK MANAGEMENT WORKSHEET

For use of this form, see FM 5-19; the proponent agency is TRADOC.

1. MSN/TASK	2a. DTG BEGIN	2b. DTG END	3. DATE PREPARED (*YYYYMMDD*)
Protect against Heat Injuries			

4. PREPARED BY

a. LAST NAME	b. RANK	c. POSITION

5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	H. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. WAS CONTROL EFFECTIVE?
	Heat load (heat index and Soldier's activities today and the past 2 days)		Consider relocating or rescheduling training		Unit leaders' conference prior to training	BN and CO CDRs	
	Soldiers in general not acclimatized to heat		Consider relocating or rescheduling training		Unit leaders' conference prior to training	BN and CO CDRs	
	Individual Soldiers not acclimatized to heat		Mark individual Soldiers who are overweight		Soldier Assessment Report (USAAC Form 113)	PSG, SL	
	Soldiers overweight/unfit		Mark individual Soldiers who are overweight		Soldier Assessment Report (USAAC Form 113)	PSG, SL	
	Soldiers are under-hydrated		Plan for and enforce adequate water consumption, especially on evening prior to training		Soldier Assessment Report (USAAC Form 113)	PSG, SL	
	Soldiers have minor illnesses and/or taking medications		Ensure early symptoms of illness are identified and treated		Observation of Soldiers and enforcing recommendations on sick slip	PSG, SL	
	Soldiers with prior histories of heat injury		Identify and monitor trainees with prior heat injuries		Soldier Assessment Report (USAAC Form 113)	PSG, SL	

Additional space for entries in Items 5 through 11 is provided on Page 2.

13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)

☐ LOW ☐ MODERATE ☐ HIGH ☐ EXTREMELY HIGH

14. RISK DECISION AUTHORITY

a. LAST NAME	b. RANK	c. DUTY POSITION	d. SIGNATURE

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Figure B-1. Sample composite risk assessment worksheet – heat injury

Appendix C
Composite Risk Assessment Worksheet – Cold Injury

C-1. Composite risk assessment worksheet – cold injury

This worksheet (figure C-1) is provided as an example only. Each worksheet should be developed specifically for each site.

COMPOSITE RISK MANAGEMENT WORKSHEET

For use of this form, see FM 5-19; the proponent agency is TRADOC.

1. MSN/TASK	2a. DTG BEGIN	2b. DTG END	3. DATE PREPARED (*YYYYMMDD*)
Protect against Cold Injuries			

4. PREPARED BY		
a. LAST NAME	b. RANK	c. POSITION

5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	H. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. WAS CONTROL EFFECTIVE?
	Cold (wind chill 40° and below); wet (rain, snow, ice, humidity), or wet clothing; wind (wind speed 5 mph and higher)		Consider relocating or rescheduling training		Unit leaders' conference prior to training	BN and CO CDRs	
	Lack of adequate clothing/ shelter		Specify packing list, inspect Soldiers' packs, and replace missing or unservice-able items; ensure warming shelters are available at training site		Unit leaders' conference prior to training	BN and CO CDRs	
	Lack of provisions/ water; dehydration		Ensure rations and water are available; consider supplemental snacks and warm beverages		Unit leaders' conference prior to training	BN and CO CDRs	
	Low activity		Plan activities that move large muscle groups		Unit leaders' conference prior to training	BN and CO CDRs	
	Previous cold- or other type injuries (e.g., Soldier's activity is limited)		Identify and monitor trainees with prior cold injuries or other type injuries		Soldier Assessment Report (USAAC Form 113)	PSG, SL	
	Skipping meals/ poor nutrition		Enforce consumption of meals		Observation of Soldiers	PSG, SL	
	Fatigue/ sleep deprivation		Develop/ enforce rest and sleep plan		Training event planning	PSG, SL	
	Little experience/ training in cold weather		Identify and monitor trainees with little experience/ training in cold weather		Soldier Assessment Report (USAAC Form 113)	PSG, SL	
	Soldiers with prior histories of cold injury		Identify and monitor trainees with prior cold injuries		Soldier Assessment Report (USAAC Form 113)	PSG, SL	
			Additional space for entries in Items 5 through 11 is provided on Page 2.				

13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)

☐ LOW ☐ MODERATE ☐ HIGH ☐ EXTREMELY HIGH

14. RISK DECISION AUTHORITY			
a. LAST NAME	b. RANK	c. DUTY POSITION	d. SIGNATURE

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Figure C-1. Sample composite risk assessment worksheet – cold injury

Appendix D
Instructions on Use of Iced Sheets

D-1. Concept

a. The use of bed sheets cooled with ice water has been proven to significantly improve the recovery and outcome of persons suffering from heat stroke.

b. The use of iced sheets for treatment of heat stroke in the field is recommended in TB MED 507, paragraph 5-2; TVT 8-460, Heat Injury Risk Management; and TRADOC Regulation 350-6, paragraph H-12f.

D-2. Procedure

The recommended indications and procedures for use of iced sheets are as follows:

a. Provide iced sheets in accordance with risk assessment and local guidance.

b. Prepare iced sheets by placing ordinary bed sheets in iced water.

(1) Keep iced water ready in Igloo$^{(R)}$-type ice chests.

(2) Have sheet readily available, either soaking in iced water or in resealable plastic bags.

(3) When needed, immerse sheet in iced water and ensure it is saturated; this can be done as Soldier's outer clothing is being removed.

c. Depending on the risk, the ice chests can be maintained at training sites by drill sergeants; carried on ambulances or nonstandard evacuation vehicles; and maintained at troop medical clinics.

d. Iced sheets should be applied anytime a Soldier has a change in their mental status and consideration is given to environmental heat exposure being the cause of this change (that is, either during environmental heat extremes or following days of exposure to environmental heat extremes). Mental status changes include confusion, inability to properly follow commands, loss of consciousness, etc. ***The mental status changes of heat injury are more important than the Soldier's temperature when deciding on the treatment of heat injuries***. Ask the following questions to assess mental status:

(1) What is your name?

(2) What month is it? What year is it?

(3) Where are you?

(4) What were you doing before you became ill?

e. Iced sheets should always be applied as follows:

(1) Cover as much exposed skin as possible with the ice-cold sheets.

(2) Also cover the top of the head.

(3) When sheets warm up, put them back into cooler and then reapply.

f. Iced sheets should be re-iced and re-applied (or completely replaced) whenever the iced sheets become warm (because the sheets are no longer delivering cooling therapy). *Cooling should be continued until EMS arrives. Do not disrupt cooling on the basis of a temperature measurement (for example, with ear or skin thermometer).*

g. Evacuate any Soldier who requires cooling with iced sheets to the nearest emergency room via EMS.

Appendix E
Instructions on Use of the WBGT

E-1. Types of WBGTs

a. The mechanical WBGT kit is the U.S. Army standard. Commanders may use digital WBGTs at their discretion.

b. The TRADOC Surgeon's Office recommends the use of a regularly calibrated, mechanical WBGT kit (NSN 6665-00-159-2218, WBGT Kit with Tripod: NSN 6665-01-381-3023, NSN Source: FM 4-25.12).

c. Commanders may, at their discretion, use alternative digital WBGT measurement devices called handhelds or heat stress monitors (HSMs).

(1) Should commanders choose the digital alternative, such measuring instruments must receive yearly calibration via appropriate calibrating activities (such as test, measurement and diagnostic equipment [TMDE]). Inaccuracies may occur if the operator is in close proximity to the unit (that is, when using a handheld device) or when digital WBGT/HSM devices are left outside for long periods without use.

(2) Acceptable commercially-available HSM devices include the QUEST emp 36, the Extech HT30, and the WIBGET RSS-214. Consult with the installation Environmental Health Section, Safety, and Department of Public Works for assistance in choosing a device.

E-2. Method for use of the WBGT

a. The standard method for measuring the heat index is to calculate the values of radiant heat, humidity, air movement, and shaded temperatures via WBGT thermometer. This device requires reading the mercury levels in ruled glass columns and using a slide rule-type index to obtain the heat index. The less expensive mechanical WBGT kits can be used at various sites in the training area at a significantly lower cost. Refer to TB MED 507, Heat Stress Control and Heat Casualty Management, accessible at http://chppm-www.apgea.army.mil/documents/TBMEDS/tbmed507.pdf, appendix B, for instructions on employing the mechanical WGBT device.

b. Any WBGT device, whether mechanical or digital, should be calibrated by TMDE support personnel on schedule in accordance with guidelines for the equipment.

c. Employ field sanitation team members to maintain and operate WBGT devices.

Appendix F
Methods for Controlling Risk of Heat and Cold Injury

F-1. Marking Soldiers at risk

a. Consult "Commander's, Senior NCO's and Instructor's Guide to Risk Management of Heat Casualties" and "Unit Leader's and Instructor's Risk Management Steps for Preventing Cold Casualties" (cited in paragraphs 2-2 and 3-2) to determine individual Soldiers' risk factors for heat and cold injury.

b. Ensure cadre identify and mark Soldiers who are at risk for heat and cold injury:

(1) Colored, square Velcro patch affixed to the upper left sleeve (such as red for heat injury risk and blue for cold injury risk).

(2) Colored beads strung on parachute ("550") cord (such as red for heat injury risk and blue for cold injury risk), which can double as hydration tracking (see below). Refer to "Examples of Marking Soldiers with Prior Injuries" at http://www.tradoc.army.mil/csm/docs/MARKING%20 slides.pdf for instructions on configuring the cords.

(3) Colored wrist or armbands (figure F-1) (red for heat and blue for cold).

Figure F-1. Colored beads on 550 cord

F-2. Monitoring Hydration Status

a. The following methods are recommended to monitor Soldiers' hydration status:

(1) Parachute 550 cord tied to a uniform buttonhole or ear plug case. Soldiers tie a knot in the cord each time they finish a canteen (1 quart) of water. (See figure F-2.)

Figure F-2. Knotted 550 cord

(2) Beads on a 550 cord. Ten beads are strung on 550 cord (figure F-3) for Soldiers to move up or down for each quart of fluid they have consumed.

Figure F-3. Beads on 550 cord

F-3. Reduce heat load

Provide for Soldiers to shower unclothed in cold water at the end of a day of moderate and heavy training in category 3 and above to reduce heat load.

Glossary

Section I
Abbreviations

CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
DA	Department of the Army
EMS	emergency medical service
EOC	emergency operations center
HSM	heat stress monitors
IAW	in accordance with
TMDE	test, measurement and diagnostic equipment
TRADOC	U.S. Army Training and Doctrine Command
WBGT	wet bulb globe temperature